**Unit Title: Grade 9 – Algebraic Properties and Operations**

**Organizing Concept: Equations and Inequalities: Creating and Solving**

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| **Questions to Assess Prior Knowledge:**   * Leveled questions on simplifying expressions  1. 3x + 4x – 6x 2. 3xy + 2x2+3xy -4x2 3. 3(x+1) + 5(x-3)   Use as a ticket in or out to group students by ability.   * Have students solve equations written in two ways:   3x + 1 = 13 vs 13 = 3x + 1   * Quick recall of inequalities   What does each symbol mean?   * PAS Strategy with a Pre-Assessment   + The PAS Strategy is a literacy tool that helps students preview the text, access prior knowledge, and set the purpose.   + The PAS Strategy can be used for any type of text, but it works so great with pre-tests.   + Use the attached form with a pre-test to assess prior knowledge and set the purpose with key vocabulary and ideas for the unit. [PAS Strategy for Pre-Tests](file:///C:\Documents%20and%20Settings\Owner\Desktop\PAS_for%20Pre%20Test.pdf) |
| **Questions to Draw-out Misconceptions:**   * Translating inequalities to math and math to inequalities   Write “Sally can spend at least $20 at the mall” into an inequality.  Write a situation for x > 12   * Write an inequality or equation that is represented in the graph. * Show an equation/inequality solved out and have students write out what happened in each step. Can use any of the examples below. |
| **DOK 1:**   * Basic solving and graphing  1. 2(*x* + 9) – 5 = 1 2. 6*x* – 2.1 = 9.3 3. 36 – 3(2 – 4*x*) = 0 4. **= –3** 5. Solve the formula for *w. V* **=** 6. Solve the formula for a2. c2 = a2  + b2 7. Solve the inequality, showing each step of your solution. Graph the solution on a number line.  * Recall a skill from the investigation ([Toe the Line 5.5](file:///C:\Documents%20and%20Settings\Owner\Desktop\DA2_Investigations_WholeBook.pdf)) Attached see page 127.   Remember the investigation Toe the Line. What was the main idea of the investigation? What did we learn as a class? Why is this an important concept to remember? |
| **DOK 2:**   * Compare and contrast solving, graphing and the solutions for equations and inequalities. * Consider the inequality 6 – 2*x* ≤ 9 + 8*x*.  1. Solve the inequality, showing each step of your solution.   **b.** Explain how you could check your solution by graphing two equations. (Do not actually graph the equations.) |
| **DOK 3:**   * Using equations that end up with no solution, have kids defend the reason why!  1. 3(x - 4) = 3x + 5  * Show a solution, student has to see what went wrong. (see/do) * Critique Joey’s problem and solution. * Is the solution correct? If not explain what he did wrong. * Revise the see/do table and check your answer using substitution. |
| **DOK:4**   * Create your own situation to include an equation and corresponding graph. * Create your own situation to include an inequality and corresponding graph. |
| **Literacy – Writing to Learn:**   * The solution(s) to equations involves \_\_\_\_\_\_\_\_\_\_\_\_, but the solution(s) to inequalities involves \_\_\_\_\_\_\_\_\_\_\_\_\_\_. * This would be a great place to insert a mentor text type situation. Maybe a bunch of equations written from situations along with a bunch of inequalities and have the kids do an always/sometimes/never about when it is appropriate for an equation to be written versus an inequality. |